INCH-POUND

MIL-PRF-39035C
AMENDMENT 3
22 July 1997
SUPERSEDING
AMENDMENT 2
31 January 1994

PERFORMANCE SPECIFICATION

RESISTOR, VARIABLE, NON-WIRE-WOUND (ADJUSTMENT TYPE),
ESTABLISHED RELIABILITY
GENERAL SPECIFICATION FOR

This amendment forms a part of MIL-PRF-39035C, dated 11 October 1991, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 4

2.1.2, Non-government publications, add:

"AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

"ASTM B545 (Standard Specification for Electrodeposited Coating of Tin).

"(Applications for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)"

PAGE 8

3.5.11.2a and 3.5.11.2b, delete and substitute:

"a. After the 100 percent group A screening tests, unless otherwise approved for lots subjected to this process (see 4.6.1.2.2), electrical measurements are required in accordance with group A, subgroup 2 (ppm-2). (Note: The manufacturer may solder dip/retin prior to the 100 percent electrical measurements of the group A, subgroup 1 tests). The percentage defective allowable (PDA) for the electrical measurements shall be as for the subgroup 1 tests.

"b. As a corrective action if the lot fails the group A solderability test, for lots subjected to this process, electrical measurements are required in accordance with group A, subgroup 2 (ppm-2). (Note: Data from this test shall not be used for ppm calculation."

After 3.5.11.3:

"3.5.12 Tin plated finishes. Use of tin plating is prohibited as a final finish and as an undercoat (see 6.13.1). Use of tin-lead (Sn-Pb) finishes are acceptable provided the minimum lead content is 3 percent."

PAGE 9

FIGURE 2, delete and substitute:

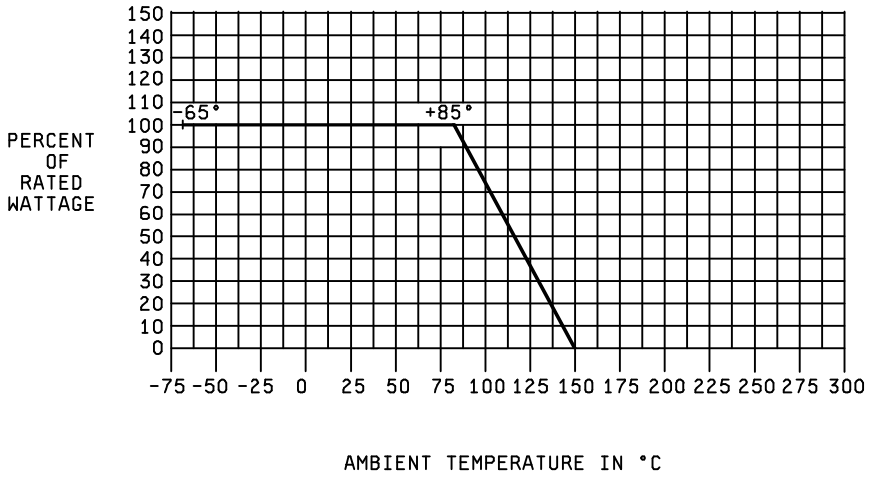

FIGURE 2. Derating curve for high ambient temperatures. "

PAGE 10

3.16.2, fourth line, between "the" and "arm", add "contact".

3.16.3, third line, delete "top" and substitute "stop".

PAGE 11

3.23, under "Setting stability", delete "1" and add "±1".

3.26, under "Setting stability", delete "2" and add "±2".

3.27, under "Setting stability", delete "2" and add "±2".

PAGE 14

4.1.3, after the last sentence, add:

"In addition, the manufacturer shall demonstrate resistance temperature characteristic (RTC) control in the process."

PAGE 15

TABLE VI, group IA, "Number of defective allowed" column, delete "N/A". In the same group, delete "0" and substitute "N/A". Add "0" to group II.

4.6.1.2, delete in its entirety and substitute:

"4.6.1.2 Group A inspection. Group A inspection shall consist of the examinations and tests specified in table VII."

4.6.1.2.1, fifth line, delete the word "not" between "shall" and "be".

TABLE VII, delete and substitute:

" TABLE VII. Group A inspection.

Inspection	Requirement	Method	Sampling procedure
Subgroup 1 1/			
Conditioning	3.8	4.7.2	100 percent
Contact resistance variation	3.9	4.7.3	inspection
Immersion	3.12	4.7.6	
Subgroup 2 (ppm)			
Total resistance (ppm-2)	3.11.1	4.7.5.1	See 4.6.1.2.3.1
Mechanical (ppm-3) (dimensions only)	3.5	4.7.1	See 4.6.1.2.3.2
Subgroup 3 2/			
Visual examination	3.33 to 3.34	4.7.1	See 4.6.1.2.4
Subgroup 4 2/ 3/			
End resistance	3.11.2	4.7.5.2	
Actual effective electrical travel	3.13	4.7.7	See 4.6.1.2.5
Dielectric withstanding voltage	3.14	4.7.8	
Insulation resistance	3.15	4.7.9	
Torque	3.16	4.7.10	
Thermal shock	3.17	4.7.11	
Subgroup 5 2/			
Solderability	3.18	4.7.13	See 4.6.1.2.7

1/ One hundred percent solder dip may be performed prior to immersion (see 3.5.11.2a).
2/ At the option of the manufacturer, subgroups 3, 4, and 5 may be performed concurrently with a separate set of samples.
3/ If the manufacturer can demonstrate this test has been performed for ten consecutive lots with zero failures, this test can be performed on a 6 month basis, with the approval of the qualifying activity. If the design, material, construction, or processing of the part is changed, or, if there are any quality problems or failures, the qualifying activity may require resumption of the original test frequency."

4.6.1.2.3.1, add:

"The rejected lot shall be segregated from new lots and lots that have passed inspection. The rejected lot shall be 100 percent inspected for those quality characteristics found defective in the sample. Any defects found shall be removed from the lot. A new sample of parts shall be randomly selected in accordance with table VIII. If one or more defects are found in this second sample, the lot shall be rejected and shall not be supplied to this specification."

4.6.1.2.3.2, delete and substitute:

"4.6.1.2.3.2 PPM-3. Statistical sampling inspection shall be performed on an inspection lot basis. A sample of 13 parts shall be randomly selected; if one or more defects are found, the lot shall be rescreened and defects removed. A new sample of 13 shall be randomly selected; if one or more defects are found in this 2nd sample, for the same dimension(s) as the lot was originally screened for, the lot shall be rejected and shall not be supplied to this specification."

4.6.1.2.3.3, delete in its entirety.

4.6.1.2.4, delete and substitute:

"4.6.1.2.4 Subgroup 3. Statistical sampling inspection shall be performed on an inspection lot basis. A sample of 13 parts shall be randomly selected; if one or more defects are found, the lot shall be rescreened and defects removed. A new sample of 13 shall be randomly selected; if one or more defects are found in this second sample for the same characteristics as the lot was originally screened for, the lot shall be rejected and shall not be supplied to this specification."

4.6.1.2.5, the last sentence, delete.

TABLE VIII, delete and substitute:

" TABLE VIII. Sampling plans for ppm categories.

Lot size	Sample size ppm-2	Sample size ppm-3
1 - 13	100%	100%
14 - 125	100%	13
126 - 150	125	13
151 - 280	125	20
281 - 500	125	29
501 - 1,200	125	34
1,201 - 3,200	125	42
3,201 - 10,000	125	50
10,001 - 35,000	294	60
35,001 - 150,000	294	74
150,001 - 500,000	345	90
500,001 and over	435	102

"

* 4.6.1.2.6, delete.

4.6.1.2.7.1, delete and substitute:

"4.6.1.2.7.1 Sampling plan. Five samples shall be selected randomly from each inspection lot and subjected to the subgroup 6 solderability test, if one or more defects are found, the lot shall be rejected."

PAGE 21

4.6.1.2.7.1.1b., delete the last two sentences and substitute:

"Five additional samples shall be selected and subjected to the solderability test with zero defects allowed. If the lot fails this solderability test, the lot may be reworked a second time and retested. If the lot fails this second rework the lot shall be considered rejected and shall not be furnished against the requirements of this specification."

After 4.6.2.1.1, add:

"4.6.2.1.1.1 Quarterly (subgroup 2 and subgroup 3). Quarterly, the specified number of sample units shall be subjected to the tests specified in table VIII.

"4.6.2.1.1.2 Semiannual. Sample units and tests shall be as specified in table VIII.

"4.6.2.1.1.3 Annual. Sample units and tests shall be as specified in table VIII."

TABLE IX, delete and substitute:

" TABLE IX. Group B inspection.

Inspection	Requirement	Method	Number of samples	Number of defectives	
Quarterly Subgroup 1 Life	3.30	4.7.25	See 4.6.2.1.1	See 4.6.2.1.1	
Subgroup 2 Resistance-temperature characteristic 1/ Moisture resistance 2/ Contact resistance variation 1/	3.19 3.20 3.9	4.7.14 4.7.15 4.7.3	12 6 highest 6 lowest	1	1
Subgroup 3 3/ Rotational life Contact resistance variation Terminal strength	3.28 3.9 3.29	4.7.23 4.7.3 4.7.24	12 6 highest 6 lowest	1	
Semiannually Subgroup 1 1/ Resistance to soldering heat Immersion High temperature exposure Contact resistance variation Integrity of shaft	3.25 3.12 3.27 3.9 3.10	4.7.20 4.7.6 4.7.22 4.7.3 4.7.4	12 6 highest 6 lowest	1	1
Subgroup 2 3/ Setability Low temperature operation Shock (specified pulse) Vibration (high frequency)	3.21 3.26 3.22 3.23	4.7.16 4.7.21 4.7.17 4.7.18	12 6 highest 6 lowest	1	
Subgroup 3 1/ Resistance to solvents	3.31	4.7.26	4-any value	0	
Annually 3/ Salt spray (corrosion)	3.24	4.7.19	3-any valve	0	

1/ If the manufacturer can demonstrate that this test has been performed for five consecutive times with zero failures, this test, can be performed on an annual basis, with the approval of the qualifying activity. If the design, material, construction, or processing of the part is changed, or if there are any quality problems or failures, the qualifying activity may require resumption of the original test frequency.

2/ Every 6 months, test duration shall be 20 cycles.

3/ If the manufacturer can demonstrate that these tests have been performed for five consecutive times with zero failures, these tests, with the approval of the quality activity, can be deleted. The manufacturer, however, shall perform these tests every 3 years after the deletion as part of long term design verification. If the design, material, construction, or processing of the part is changed, or if there are any problems, the qualifying activity may require resumption of the specified testing. Deletion of testing does not relieve the manufacturer from meeting the test requirement in case of dispute. "

PAGE 23

4.7.2d, delete and substitute:

"d. Operating condition - DC continuous working voltage or continuous working voltage from an ac supply at commercial line frequency and waveform equivalent to 1.5 times the specified wattage (see 3.1), shall be applied between the end terminals intermittently 1.5 hours "on" and 0.5 hours "off" for a minimum of 50 hours +8 hours, -0 hours at a temperature of 25°C, +10°C, -5°C. Each resistor shall dissipate 1.5 times rated wattage, not to exceed the maximum voltage specified for each style (see 3.1)."

4.7.2g, delete the word "minimum".

PAGE 29

4.7.15f, add:

"g. Steps 7A and 7B: Steps 7A and 7B are not applicable to this specification."

PAGE 30

4.7.22.2, delete:

PAGE 31

4.7.23.1, delete and substitute:

"4.7.23.1 Mounting. Resistors shall be suitably mounted as to allow electrical connections to be made to the terminals and concurrent contact arm actuation of each "pair" of resistors. The resistors, ganged in pairs, shall have each pair connected in series as shown on figure4, so that a nominally constant current flows through the resistors, irrespective of the contact-arm position during the turning of the lead screw actuators."

PAGE 32

4.7.24.3, second line, between ".125" and "from" add "inch".

PAGE 33

* 6.2, acquisition requirements, add:

“f. Terminal lead lengths requirements (applicable to MIL-PRF-39035/2 (RJR24) only).”

PAGE 36

After 6.13, add the following new paragraph:

"6.13.1 Tin plated finishes. Tin plating is prohibited (see 3.5.12) since it may result in tin whisker growth. Tin whisker growth could adversely affect the operation of electronic equipment systems. For additional information on this matter refer to ASTM B545 (Standard Specification for Electrodeposited Coating of Tin)."

PAGE 38

TABLE XIV, fourth column, delete "Quarterly" and substitute "Quantity"; delete "26" for highest and substitute "25", and delete "25" for lowest and substitute "26", respectively.

PAGE 39

TABLE XIV, fourth column, delete "Quarterly" and substitute "Quantity"; delete "26" for highest and substitute "25", and delete "25" for lowest and substitute "26", respectively.

The margins of this amendment are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

Custodians:
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Army - AR, AT, AV, CR4, MI
Navy - AS, MC, OS
Air Force - 17, 19, 99
NASA - NA

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